AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph beginning at page 4, line 8, with the following rewritten paragraph:

--Preferably, the displacement machine is characterised in that

- points M on a first of the two arcs of the m-lobed profile being defined by two functions $\rho(\delta)$ and $\sigma(\delta)$ connecting the parameters ρ and σ to the parameter δ seen as a coordinate on the arc and which are:

ρ: measured along the normal to the arc at point M, the distance between point M and the middle N between the two points of intersection P and D, proximal and distal respectively, of the said normal with the pitch circle with centre O of the m-lobed profile, and with a radius assumed equal to 1, the proximal point of intersection P being located between point M on the given arc and the distal point of intersection D,

δ: angular half-distance between D and P relative to the centre O, measured clockwise,

σ: polar angle of the proximal point of intersection P relative to O, minus δ,

the functions $\rho(\delta)$ and $\sigma(\delta)$ having a domain of <u>definition</u> between $\delta=0$ and $\delta=\pi$,

- two arcs of the pattern of the (m−1)-lobed profile are a proximal conjugate arc and a distal conjugate arc defined below in a Cartesian reference system with their origin at the centre O of the pitch circle associated with the m-lobed profile:

a) proximal conjugate arc:

$$x_{CjP}(\delta) = (1 + (\sin(\delta) - m\rho(\delta))\sin\left(\frac{\delta - m\sigma(\delta)}{m-1}\right) + (m-1)\cos(\delta)\cos\left(\frac{\delta - m\sigma(\delta)}{m-1}\right))/m$$

$$y_{CjP}(\delta) = ((\sin(\delta) - m\rho(\delta))\cos\left(\frac{\delta - m\sigma(\delta)}{m-1}\right) - (m-1)\cos(\delta)\sin\left(\frac{\delta - m\sigma(\delta)}{m-1}\right))/m$$

b) distal conjugate arc:

$$x_{CjD}(\delta) = (1 + (\sin(\delta) + m\rho(\delta))\sin\left(\frac{\delta + m\sigma(\delta)}{m-1}\right) + (m-1)\cos(\delta)\cos\left(\frac{\delta + m\sigma(\delta)}{m-1}\right))/m$$

$$y_{CjD}(\delta) = (-(\sin(\delta) + m\rho(\delta))\cos\left(\frac{\delta + m\sigma(\delta)}{m-1}\right) + (m-1)\cos(\delta)\sin\left(\frac{\delta + m\sigma(\delta)}{m-1}\right))/m$$

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Please replace the paragraph beginning at page 19, line 22, with the following rewritten paragraph:

--In this case, the complemented profile is formed by the concatenation of the given arc and the proximal complementary arc, repeated by rotations of 2π/m around the origin. The profile is of order m, ~~that is, it is maintained by the rotation of~~ i.e. is unchanged when it is rotated by 2π/m (around the origin) and it has m lobes or teeth. This is the profile shown partly in figure 5.--

Please replace the paragraph beginning at page 20, line 30, with the following rewritten paragraph:

--It can be demonstrated that the only singularities likely to appear on the arcs associated with a regular given arc are of the swallowtail type: two cusps surrounding a self-intersection. The condition for this not to occur is simply that the speed vector (vector derived from the current point on the arc relative to the parameter) is not cancelled over the interval]0,π[. These four speeds (corresponding to the four arcs from which the two profiles are formed) are

expressions dependent on δ, $\rho(\delta)$ and the derivative $\rho'(\delta)$. The ~~non-cancellation~~ non-vanishing of these expressions is therefore a constraint on the function $\rho(\delta)$. This constraint must be approached from the angle of verification, unless the systems of non-linear differential inequations can be solved. For the given arc, the condition on the amplitude of the speed is written:

$$V(\delta) = (\rho(\delta)\rho'(\delta))/\cos(\delta)-\sin(\delta)\neq 0$$

and this condition simply expresses that the quotient by $\cos(\delta)$ of the derivative of the square of the radius vector keeps a constant sign.--

Please replace the paragraph beginning at page 21, line 22, with the following rewritten paragraph:

--An interesting family of pairs of profiles in the first class is obtained from arcs of ~~shortened~~ curtate (or contracted) epicycloids. These are in fact typical solutions, more than an example.--

Please replace the paragraph beginning at page 21, line 25, with the following rewritten paragraph:

--These arcs depend on three parameters: n is the order of the epicycloid, which can be chosen as real (positive and not too small), φ is an angular parameter of between 0 and $\pi/2$, which describes the ~~shortening (or eccentricity)~~ contraction of the curtate epicycloid, and finally ρ_0 is the parallelism parameter, that is, a parameter characterising the distance to the base epicycloid. The calculation of $\rho(\delta)$ and $\sigma(\delta)$ gives:

$$\rho(\delta) = (1-1/n)(1/\cos(\varphi)^2)-\cos(\delta)^2)^{1/2}+(1/n)\sin(\delta)+\rho_0$$

$\sigma(\delta) = (1-1/n)\arccos(\cos(\delta)\cos(\varphi))+(\delta/n)$--

Please replace the paragraph beginning at page 27, line 15, with the following rewritten paragraph:

--Figure 14 shows a particularly preferred embodiment of a machine with a profile according to figure 1. The distribution principle is the same as in figure 12, and in each plane perpendicular to the axes the profiles 3 and 4 are those in figure 1. However, from one plane to another, each profile 3 or 4 is angularly displaced by a given pitch around its respective axis in order to give all of the profiled members a helical appearance. The angular displacement between the profiles of the two extremities is such that in the situation shown, where the chamber V_5 on the intake side is reaching the bifurcation point B_N, the rear edge of this chamber, which itself has a helical appearance, has just left the other osculation at the other bifurcation point B_M. The situation that was obtained by a profile in a single plane in the cases of figures 11B and 12 is therefore restored by means of helicity, namely that the same cavity is adjacent to an appearing cavity at its front edge and a disappearing cavity at its rear edge. This cavity V_5 is therefore only isolated for a short instant when the instantaneous speed of variation in its volume is equal to zero. In figure 14, the vertices of the profile 3 of the profiled inner member are shown with solid lines and some of the vertices of the lobes of the profile of the outer profiled member 4 are shown with a dash and cross line. The centres O and O' of the profiles of the successive planes are aligned along parallel axes of rotation that are also parallel to a straight line [[R_R]] <u>RR</u> on which the rolling points R are aligned.--

Please replace the paragraph beginning at page 28, line 9, with the following rewritten paragraph:

--Figure 15 schematically shows an embodiment of a machine in the first class according to the invention. The profiled inner member 1 is firmly attached to a drive shaft 23 that is driving in a pump and ~~consuming~~ driven in a hydraulic motor. The shaft 23 is rotatably supported, on either side of the profiled member 1, by two bearings 24 in a fixed housing 25 that forms the connecting member according to the invention. The profiled outer member 2 is rotatably supported by peripheral bearings 26 installed between the outer peripheral wall of the profiled member 2 and a peripheral ring gear 27 forming part of the housing 25. The centre line of the shaft 23 corresponds to the centre O whilst the centre line, not shown, of the bearings 26 corresponds with the centre O'. In the area in which the profiles 3 and 4 are formed, the profiled members 1 and 2 are installed between two flanges 28, 29 through which the inlet ports 16 and discharge ports 17 are respectively formed.--

Please replace the paragraph beginning at page 31, line 8, with the following rewritten paragraph:

--For the machines in the second class, there are two curves of action on the side of the rolling point and just one on the opposite side. The outer curves are simple arcs. The inner curve may have a loop, the double point of which the rolling point; this is not a singularity of the profiles. At the moment when the contact passes through the rolling point, the relative movement of the two profiles is rolling without sliding. In borderline cases for which the curve of

action has a cusp point at the rolling point, the speed of the point of contact ~~is cancelled~~ vanishes at this point.--

Please replace the paragraph beginning at page 32, line 26, with the following rewritten paragraph:

--The aim is to raise as many obstacles as possible between the low pressure side and the high pressure side of the compressor. It is therefore natural to turn the attention more to the second class of conjugate profiles; during the growth phase, the consecutive chambers remain at the inlet pressure, and during the volume shrinkage phase, compression is progressive. It is only at the end of compression that the closing chamber is adjacent to two low pressure chambers: along the outer curve of action with an appearing chamber and along the inner curve of action with a growing chamber. In both cases, the concavities of the surfaces in contact are in the same direction and the relative curvature is small (it ~~is cancelled~~ vanishes at the end of discharge). A profile that does not give rise to chamber splitting, such as the one in figures 26A and 26B, will be chosen.--